AMENDMENTS TO THE CLAIMS

Please amend the claims of the above-identified application as follows:

Claim 1 (currently amended): A solid state relay coupleable to first and second phase busses of an AC power source for switching power from said first and second phase busses to a load, said solid relay comprising:

first and second power semiconductor switches connected in a series circuit configuration and coupleable to said first and second phase busses for switching power from said first and second phase busses to said load, each of said first and second power semiconductor switches controllably operative in conductive and non-conductive states;

first and second power diodes coupled respectively across said first and second power semiconductor switches; and

a control circuit for monitoring a polarity relationship of said first and second phase busses, said control circuit, upon being enabled, operative to control [~~and controlling~~] said first and second switches [~~between~~] sequentially into conductive [~~and non-conductive~~] states based on said monitored polarity relationship, and, upon being disabled, operative to control said first and second switches sequentially into non-conductive states based on said monitored polarity relationship.

Claim 2 (original): The relay of claim 1 wherein the first and second power diodes are coupled respectively across the first and second power semiconductor switches in a circuit configuration to block current to the load when both of the first and second power semiconductor switches are in a non-conductive state.

Claim 3 (original): The relay of claim 2 wherein the series circuit configuration of the first and second power semiconductor switches is coupled in series with the load; and wherein the series circuit configuration of the load and first and second power semiconductor switches is coupled across the first and second phase busses.

Claim 4 (currently amended): The relay of claim 1 wherein the control circuit is governed by an enable signal to control the first semiconductor switch [~~between~~] from a non-conductive state to a conductive state [~~and non-conductive states based on~~] in response to a transition of a first polarity to a second polarity relationship between the first and second phase busses and, thereafter, to control the second semiconductor switch [~~between~~] from a non-conductive state to a conductive state [~~and non-conductive states based on~~] in response to a transition of the second polarity to the first polarity relationship between the first and second phase busses; and wherein the control circuit is governed by a disable signal to control the first semiconductor switch from a conductive state to a non-conductive state in response to a transition of a first polarity to a second polarity relationship between the first and second phase busses and, thereafter, to control the second semiconductor switch from a non-conductive state to a conductive state in response to a transition of the second polarity to the first polarity relationship between the first and second phase busses.

Claim 5 (original): The relay of claim 1 wherein the control circuit is governed by an enable signal that is generated from a source for controlling power to the load.

Claim 6 (original): The relay of claim 5 wherein the source of the enable signal is isolated from the control circuit.

Claim 7 (original): The relay of claim 6 wherein the enable signal is coupled to the control circuit through an opto-coupler.

Claim 8 (original): The relay of claim 1 including a floating power source for powering the control circuit.

Claim 9 (original): The relay of claim 8 wherein the floating power source is coupled between the first and second phase busses.

Claim 10 (original): The relay of claim 8 including an opto-coupler coupled between the AC power source and the control circuit and operative to supply signals representative of the polarity relationship between the first and second phase busses to the control circuit.

Claim 11 (original): The relay of claim 10 wherein the opto-coupler comprises dual optical coupling units, one optical coupling unit for supplying to the control circuit a signal representative of a first polarity relationship between the first and second phase busses and the other optical coupling unit for supplying to the control circuit a signal representative of a second polarity relationship between the first and second phase busses.

Claim 12 (original): The relay of claim 1 wherein one of the first and second phase busses is a neutral phase bus.

Claim 13 (original): The relay of claim 1 wherein the first and second semiconductor switches each comprises a power field effect transistor.

Claim 14 (original): The relay of claim 13 wherein the control circuit is coupled to gate junctions of the power field effect transistors for controlling the first and second switches between conductive and non-conductive states based on the monitored polarity relationship.

Claim 15 (original): Method of operating a solid state relay coupled to first and second phase busses of an AC power source for switching power from said first and second phase busses to a load, said method comprising the steps of:

including in said solid state relay a series circuit configuration of first and second power semiconductor switches for coupling to said first and second phase busses, and first and second power diodes coupled respectively across said first and second power semiconductor switches;

enabling said solid sate relay to supply power from said first and second phase busses to said load;

disabling said solid state relay from supplying power from said first and second phase busses to said load;

monitoring a polarity relationship of said first and second phase busses;

upon said solid state relay being enabled, controlling said first and second switches sequentially to a conductive state based on said monitored polarity relationship; and

upon said solid state relay being disabled, controlling said first and second switches sequentially to a non-conductive state based on said monitored polarity relationship.

Claim 16 (original): The method of claim 15 wherein the first and second power diodes are coupled respectively across the first and second power semiconductor switches in a circuit configuration to block current to the load when both of the first and second power semiconductor switches are in a non-conductive state.

Claim 17 (original): The method of claim 16 including the steps of: coupling the series circuit configuration of the first and second power semiconductor switches in series with the load; and coupling the series circuit configuration of the load and first and second power semiconductor switches across the first and second phase busses.

Claim 18 (original): The method of claim 15 including upon the solid state relay being enabled, controlling the first semiconductor switch to the conductive state upon a transition of a first polarity to a second polarity relationship between the first and second phase busses, and then, controlling the second semiconductor switch to the conductive state upon a transition of the second polarity to the first polarity relationship between the first and second phase busses.

Claim 19 (original): The method of claim 18 including upon the solid state relay being disabled, controlling the first semiconductor switch to the non-conductive state upon a transition of the first polarity to the second polarity relationship between the first and second phase busses, and then, controlling the second semiconductor switch to the non-conductive state upon a transition of the second polarity to the first polarity relationship between the first and second phase busses.

Claim 20 (currently amended): The method of claim 15 wherein the steps of enabling and disabling [~~are based on~~] providing a control of power to the load.

Claim 21 (new): A solid state relay coupleable to first and second phase busses of an AC power source for switching power from said first and second phase busses to a load, said solid relay comprising:

first and second power semiconductor switches connected in a series circuit configuration and coupleable to said first and second phase busses for switching power from said first and second phase busses to said load, each of said first and second power semiconductor switches controllably operative in conductive and non-conductive states;

first and second power diodes coupled respectively across said first and second power semiconductor switches; and

a control circuit for monitoring a polarity relationship of said first and second phase busses and controlling said first and second switches between conductive and non-conductive states based on said monitored polarity relationship, said control circuit being governed by an enable signal that is generated from a source, isolated from the control circuit, for controlling power to the load.

Claim 22 (new): A solid state relay coupleable to first and second phase busses of an AC power source for switching power from said first and second phase busses to a load, said solid relay comprising:

first and second power semiconductor switches connected in a series circuit configuration and coupleable to said first and second phase busses for switching power from said first and second phase busses to said load, each of said first and second power semiconductor switches controllably operative in conductive and non-conductive states;

first and second power diodes coupled respectively across said first and second power semiconductor switches;

a control circuit for monitoring a polarity relationship of said first and second phase busses and controlling said first and second switches between conductive and non-conductive states based on said monitored polarity relationship; and

a floating power source for powering the control circuit.